

# Supplementary Materials: Effects of Moss-Dominated Biocrusts on Soil Microbial Community Structure in an Ionic Rare Earth Tailings Area of Southern China

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**Table S1.** Partial soil characterization of biological soil crusts dominated by moss and bare soil.

| Item                               | Biological soil crusts dominated by moss |                |               |                | Bare soil    |
|------------------------------------|--|----------------|---------------|----------------|--------------|
|                                    | C  | O              | P             | T              |              |
| pH                                 | 7.25 ± 0.03                              | 7.29 ± 0.01    | 7.26 ± 0.01   | 7.34 ± 0.17    | 5.31 ± 0.01  |
| Total N (g kg <sup>-1</sup> )      | 1.58 ± 0.09                              | 1.41 ± 0.28    | 0.60 ± 0.16   | 0.67 ± 0.17    | 0.26 ± 0.12  |
| Total P (g kg <sup>-1</sup> )      | 0.38 ± 0.08                              | 0.25 ± 0.11    | 0.22 ± 0.15   | 0.20 ± 0.15    | 0.09 ± 0.01  |
| Total K (g kg <sup>-1</sup> )      | 39.12 ± 0.50                             | 39.71 ± 1.56   | 17.71 ± 5.74  | 40.61 ± 1.68   | 44.99 ± 1.17 |
| OM (g kg <sup>-1</sup> )           | 29.57 ± 1.43                             | 31.82 ± 3.43   | 7.72 ± 2.88   | 14.79 ± 4.57   | 2.53 ± 0.32  |
| Available N (mg kg <sup>-1</sup> ) | 147.48 ± 24.52                           | 165.10 ± 28.32 | 51.18 ± 13.24 | 123.27 ± 35.82 | 3.27 ± 1.35  |
| Available P (mg kg <sup>-1</sup> ) | 22.18 ± 0.45                             | 21.78 ± 3.04   | 8.58 ± 0.40   | 20.26 ± 0.34   | 0.30 ± 0.15  |

C: *Claopodium rugulosifolium*, O: *Orthotrichum courtoisii*, P: *Polytrichum formosum*, T: *Taxiphyllum giraldii*.

**Table S2.** Total number of core bacterial sequences in four moss-dominated biocrusts.

| OTU ID  | Number of sequences |      |      |     | Taxonomy                                   |  |                   |
|---------|---------------------|------|------|-----|--|--|-------------------|
|         | C                   | O    | P    | T   | Genus                                      | Family   | Phylum            |
| OTU1720 | 1                   | 172  | 14   | 19  | Chthoniobacter                             | Chthoniobacteraceae                                | Verrucomicrobiota |
| OTU2414 | 2                   | 1603 | 265  | 295 | Acidibacter                                | unclassified_o__Gammaproteobacteria_Incertae_Sedis | Proteobacteria    |
| OTU2810 | 1                   | 73   | 180  | 804 | Acidiphilium                               | Acetobacteraceae                                   | Proteobacteria    |
| OTU2778 | 61                  | 21   | 16   | 21  | alphaI_cluster                             | Beijerinckiaceae                                   | Proteobacteria    |
| OTU2481 | 806                 | 2824 | 943  | 449 | Bradyrhizobium                             | Xanthobacteraceae                                  | Proteobacteria    |
| OTU386  | 12                  | 288  | 134  | 22  | Bradyrhizobium                             | Xanthobacteraceae                                  | Proteobacteria    |
| OTU2984 | 1                   | 568  | 63   | 275 | Burkholderia-Caballeronia-Paraburkholderia | Burkholderiaceae                                   | Proteobacteria    |
| OTU1423 | 379                 | 117  | 133  | 2   | Devosia                                    | Devosiaceae  | Proteobacteria    |
| OTU2174 | 114                 | 65   | 19   | 1   | Devosia                                    | Devosiaceae  | Proteobacteria    |
| OTU2638 | 64                  | 2    | 181  | 1   | Ellin6067                                  | Nitrosomonadaceae                                  | Proteobacteria    |
| OTU1820 | 6                   | 4    | 58   | 1   | Enterobacter                               | Enterobacteriaceae                                 | Proteobacteria    |
| OTU2215 | 62                  | 6    | 83   | 17  | Hyphomicrobium                             | Hyphomicrobiaceae                                  | Proteobacteria    |
| OTU1843 | 5                   | 15   | 33   | 2   | IS-44                                      | Nitrosomonadaceae                                  | Proteobacteria    |
| OTU1684 | 1                   | 24   | 1    | 8   | Legionella                                 | Legionellaceae                                     | Proteobacteria    |
| OTU563  | 42                  | 17   | 57   | 2   | Massilia                                   | Oxalobacteraceae                                   | Proteobacteria    |
| OTU618  | 82                  | 9    | 69   | 3   | Massilia                                   | Oxalobacteraceae                                   | Proteobacteria    |
| OTU764  | 25                  | 4    | 11   | 1   | Massilia                                   | Oxalobacteraceae                                   | Proteobacteria    |
| OTU1622 | 153                 | 1257 | 129  | 2   | Mesorhizobium                              | Rhizobiaceae                                       | Proteobacteria    |
| OTU1102 | 46                  | 114  | 377  | 9   | Methylobacterium-Methylobacterium          | Beijerinckiaceae                                   | Proteobacteria    |
| OTU1338 | 67                  | 1769 | 1273 | 167 | Methylobacterium-Methylobacterium          | Beijerinckiaceae                                   | Proteobacteria    |
| OTU466  | 46                  | 46   | 178  | 7   | Methylobacterium-Methylobacterium          | Beijerinckiaceae                                   | Proteobacteria    |
| OTU3120 | 11                  | 637  | 117  | 990 | Methylocella                               | Beijerinckiaceae                                   | Proteobacteria    |
| OTU2785 | 75                  | 42   | 156  | 39  | Methylospora                               | Beijerinckiaceae                                   | Proteobacteria    |
| OTU1695 | 22                  | 11   | 5    | 1   | MND1                                       | Nitrosomonadaceae                                  | Proteobacteria    |
| OTU1565 | 1                   | 588  | 394  | 583 | norank                                     | Acetobacteraceae                                   | Proteobacteria    |
| OTU2732 | 1                   | 17   | 57   | 80  | norank                                     | Acetobacteraceae                                   | Proteobacteria    |
| OTU1241 | 5                   | 18   | 39   | 7   | norank                                     | Caulobacteraceae                                   | Proteobacteria    |
| OTU2234 | 1                   | 8    | 652  | 30  | norank                                     | Caulobacteraceae                                   | Proteobacteria    |
| OTU2662 | 2                   | 3    | 7    | 2   | norank                                     | Holosporaceae                                      | Proteobacteria    |
| OTU1337 | 18                  | 600  | 246  | 40  | norank                                     | Micropepsaceae                                     | Proteobacteria    |
| OTU1230 | 5                   | 135  | 113  | 34  | norank                                     | Mitochondria                                       | Proteobacteria    |
| OTU1348 | 1                   | 63   | 32   | 1   | norank                                     | Rhodospirillaceae                                  | Proteobacteria    |
| OTU1221 | 193                 | 364  | 35   | 121 | norank                                     | Xanthobacteraceae                                  | Proteobacteria    |

|         |      |      |      |      |                    |                       |                 |
|---------|------|------|------|------|--------------------|-----------------------|-----------------|
| OTU1535 | 87   | 120  | 204  | 4    | norank             | Xanthobacteraceae     | Proteobacteria  |
| OTU2688 | 125  | 73   | 54   | 52   | norank             | Xanthobacteraceae     | Proteobacteria  |
| OTU867  | 250  | 44   | 101  | 11   | norank             | Xanthobacteraceae     | Proteobacteria  |
| OTU2208 | 16   | 15   | 27   | 2    | Novosphingobium    | Sphingomonadaceae     | Proteobacteria  |
| OTU831  | 119  | 5    | 20   | 1    | Novosphingobium    | Sphingomonadaceae     | Proteobacteria  |
| OTU1067 | 297  | 9    | 127  | 1    | Phenylobacterium   | Caulobacteraceae      | Proteobacteria  |
| OTU1286 | 4    | 16   | 134  | 1    | Phenylobacterium   | Caulobacteraceae      | Proteobacteria  |
| OTU1350 | 34   | 374  | 128  | 6    | Reyranella         | Reyranellaceae        | Proteobacteria  |
| OTU472  | 16   | 1    | 1    | 1    | Reyranella         | Reyranellaceae        | Proteobacteria  |
| OTU1821 | 47   | 39   | 161  | 1    | Rhizobacter        | Comamonadaceae        | Proteobacteria  |
| OTU1202 | 61   | 98   | 90   | 4    | Rhodoplanes        | Xanthobacteraceae     | Proteobacteria  |
| OTU866  | 119  | 4    | 1    | 6    | Rhodoplanes        | Xanthobacteraceae     | Proteobacteria  |
| OTU1026 | 42   | 1    | 3    | 2    | Sphingoaurantiacus | Sphingomonadaceae     | Proteobacteria  |
| OTU1389 | 32   | 5    | 29   | 4    | Sphingomonas       | Sphingomonadaceae     | Proteobacteria  |
| OTU2026 | 829  | 283  | 1088 | 12   | Sphingomonas       | Sphingomonadaceae     | Proteobacteria  |
| OTU63   | 6147 | 633  | 2209 | 18   | Sphingomonas       | Sphingomonadaceae     | Proteobacteria  |
| OTU735  | 142  | 83   | 43   | 2    | Sphingomonas       | Sphingomonadaceae     | Proteobacteria  |
| OTU892  | 1377 | 99   | 821  | 37   | Sphingomonas       | Sphingomonadaceae     | Proteobacteria  |
| OTU2024 | 1    | 47   | 81   | 50   | unclassified       | Acetobacteraceae      | Proteobacteria  |
| OTU1620 | 31   | 20   | 15   | 1    | unclassified       | Comamonadaceae        | Proteobacteria  |
| OTU1623 | 76   | 157  | 28   | 1    | unclassified       | Comamonadaceae        | Proteobacteria  |
| OTU1947 | 59   | 7    | 17   | 2    | unclassified       | Comamonadaceae        | Proteobacteria  |
| OTU3015 | 15   | 11   | 7    | 19   | Aquisphaera        | Isosphaeraceae        | Planctomycetota |
| OTU2802 | 2    | 1    | 1    | 3    | norank             | Gemmataceae           | Planctomycetota |
| OTU1613 | 3    | 89   | 9    | 13   | norank             | Isosphaeraceae        | Planctomycetota |
| OTU2389 | 1    | 1    | 16   | 76   | norank             | Isosphaeraceae        | Planctomycetota |
| OTU3075 | 1    | 51   | 1    | 151  | norank             | Isosphaeraceae        | Planctomycetota |
| OTU1212 | 1    | 25   | 66   | 5    | Singulisphaera     | Isosphaeraceae        | Planctomycetota |
| OTU1331 | 3    | 464  | 6    | 4    | Tundrisphaera      | Isosphaeraceae        | Planctomycetota |
| OTU1402 | 3    | 1170 | 188  | 293  | Tundrisphaera      | Isosphaeraceae        | Planctomycetota |
| OTU1970 | 20   | 697  | 279  | 1180 | Tundrisphaera      | Isosphaeraceae        | Planctomycetota |
| OTU2345 | 5    | 36   | 50   | 206  | Tundrisphaera      | Isosphaeraceae        | Planctomycetota |
| OTU3171 | 1    | 1    | 2    | 205  | unclassified       | Isosphaeraceae        | Planctomycetota |
| OTU1290 | 3    | 1306 | 35   | 4    | Anaeromyxobacter   | Anaeromyxobacteraceae | Myxococcota     |
| OTU1372 | 9    | 72   | 43   | 5    | Haliangium         | Haliangiaceae         | Myxococcota     |
| OTU739  | 43   | 1    | 1    | 2    | Haliangium         | Haliangiaceae         | Myxococcota     |
| OTU1409 | 1    | 23   | 2    | 1    | Pajaroellobacter   | Polyangiaceae         | Myxococcota     |
| OTU3069 | 1    | 11   | 6    | 2    | Pajaroellobacter   | Polyangiaceae         | Myxococcota     |
| OTU1786 | 5    | 4    | 1418 | 2    | unclassified       | Myxococcaceae         | Myxococcota     |
| OTU2352 | 1    | 96   | 83   | 1    | unclassified       | Polyangiaceae         | Myxococcota     |
| OTU660  | 3985 | 13   | 1    | 3    | Terrisporobacter   | Peptostreptococcaceae | Firmicutes      |
| OTU1099 | 36   | 1    | 1    | 1    | unclassified       | Lachnospiraceae       | Firmicutes      |
| OTU1460 | 19   | 13   | 1    | 1    | norank             | norank_o__Chloroplast | Cyanobacteria   |

|         |      |      |      |      |                   |                           |                  |
|---------|------|------|------|------|-------------------|---------------------------|------------------|
| OTU1464 | 52   | 5744 | 859  | 531  | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU1662 | 7    | 416  | 16   | 1    | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU175  | 30   | 29   | 98   | 68   | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU1772 | 41   | 401  | 172  | 1    | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU1818 | 15   | 15   | 67   | 4    | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU2264 | 3    | 314  | 55   | 1    | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU2886 | 108  | 1432 | 367  | 2432 | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU2888 | 4    | 11   | 6    | 258  | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU2891 | 3    | 94   | 910  | 11   | norank            | norank_o__Chloroplast     | Cyanobacteria    |
| OTU1664 | 2    | 3    | 1    | 1    | norank            | Obscuribacteraceae        | Cyanobacteria    |
| OTU1589 | 1    | 988  | 3    | 1    | norank            | JG30-KF-AS9               | Chloroflexi      |
| OTU2258 | 1    | 10   | 41   | 12   | norank            | JG30-KF-AS9               | Chloroflexi      |
| OTU1215 | 2    | 7120 | 20   | 174  | norank            | Ktedonobacteraceae        | Chloroflexi      |
| OTU2261 | 2    | 4    | 41   | 107  | norank            | norank_o__norank_c__AD3   | Chloroflexi      |
| OTU2730 | 2    | 16   | 75   | 66   | norank            | fnorank_o__norank_c__TK10 | Chloroflexi      |
| OTU3112 | 1    | 20   | 9    | 339  | norank            | norank_o__norank_c__TK10  | Chloroflexi      |
| OTU1209 | 22   | 18   | 16   | 1    | Bdellovibrio      | Bdellovibrionaceae        | Bdellovibrionota |
| OTU1320 | 1    | 42   | 17   | 1    | Bdellovibrio      | Bdellovibrionaceae        | Bdellovibrionota |
| OTU1980 | 2    | 2    | 14   | 4    | Bdellovibrio      | Bdellovibrionaceae        | Bdellovibrionota |
| OTU1185 | 17   | 1    | 5    | 1    | norank            | norank_o__0319-6G20       | Bdellovibrionota |
| OTU1410 | 3    | 2    | 5    | 1    | norank            | norank_o__0319-6G20       | Bdellovibrionota |
| OTU2151 | 2    | 7    | 15   | 1    | Mucilaginibacter  | Sphingobacteriaceae       | Bacteroidota     |
| OTU1480 | 4    | 22   | 1    | 4    | Acidothermus      | Acidothermaceae           | Actinobacteriota |
| OTU2812 | 4    | 78   | 3    | 521  | Acidothermus      | Acidothermaceae           | Actinobacteriota |
| OTU2729 | 93   | 173  | 78   | 108  | Actinomycetospora | Pseudonocardiaceae        | Actinobacteriota |
| OTU152  | 249  | 20   | 67   | 2    | Actinoplanes      | Micromonosporaceae        | Actinobacteriota |
| OTU1755 | 18   | 41   | 91   | 2    | Amycolatopsis     | Pseudonocardiaceae        | Actinobacteriota |
| OTU1439 | 180  | 11   | 80   | 1    | Blastococcus      | Geodermatophilaceae       | Actinobacteriota |
| OTU1641 | 1    | 270  | 94   | 681  | Conexibacter      | Solirubrobacteraceae      | Actinobacteriota |
| OTU2991 | 1    | 4    | 4    | 274  | Conexibacter      | Solirubrobacteraceae      | Actinobacteriota |
| OTU1471 | 7    | 4    | 6    | 1    | Friedmanniella    | Propionibacteriaceae      | Actinobacteriota |
| OTU1432 | 7    | 1022 | 373  | 117  | Jatrophihabitans  | Frankiaceae               | Actinobacteriota |
| OTU1433 | 9    | 551  | 430  | 75   | Jatrophihabitans  | Frankiaceae               | Actinobacteriota |
| OTU1443 | 4    | 258  | 178  | 15   | Jatrophihabitans  | Frankiaceae               | Actinobacteriota |
| OTU1444 | 19   | 17   | 2    | 1    | Kibdelosporangium | Pseudonocardiaceae        | Actinobacteriota |
| OTU2534 | 760  | 745  | 2622 | 2    | Knoellia          | Intrasporangiaceae        | Actinobacteriota |
| OTU170  | 1177 | 25   | 16   | 5    | Lechevalieria     | Pseudonocardiaceae        | Actinobacteriota |
| OTU1437 | 77   | 226  | 52   | 7    | Leifsonia         | Microbacteriaceae         | Actinobacteriota |
| OTU2419 | 96   | 47   | 352  | 4    | Leifsonia         | Microbacteriaceae         | Actinobacteriota |
| OTU283  | 1151 | 166  | 93   | 3    | Micromonospora    | Micromonosporaceae        | Actinobacteriota |
| OTU123  | 79   | 8    | 13   | 4    | Mycobacterium     | Mycobacteriaceae          | Actinobacteriota |
| OTU163  | 2610 | 207  | 87   | 160  | Mycobacterium     | Mycobacteriaceae          | Actinobacteriota |
| OTU1541 | 1    | 19   | 14   | 3    | Nocardia          | Nocardiaceae              | Actinobacteriota |

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|         |     |     |     |     |                           |   |                  |
|---------|-----|-----|-----|-----|---------------------------|---|------------------|
| OTU2706 | 23  | 1   | 7   | 2   | norank                    | Microtrichaceae                         | Actinobacteriota |
| OTU1999 | 129 | 160 | 264 | 1   | norank                    | norank_o__Frankiales                    | Actinobacteriota |
| OTU2436 | 9   | 11  | 131 | 1   | norank                    | norank_o__Frankiales                    | Actinobacteriota |
| OTU2955 | 1   | 2   | 3   | 788 | norank                    | norank_o__IMCC26256                     | Actinobacteriota |
| OTU2652 | 3   | 1   | 20  | 5   | norank                    | norank_o__Microtrichales                | Actinobacteriota |
| OTU2986 | 1   | 6   | 17  | 273 | norank                    | Solirubrobacteraceae                    | Actinobacteriota |
| OTU1354 | 38  | 242 | 86  | 59  | Pseudonocardia            | Pseudonocardiaceae                      | Actinobacteriota |
| OTU1979 | 36  | 1   | 344 | 1   | Pseudonocardia            | Pseudonocardiaceae                      | Actinobacteriota |
| OTU535  | 141 | 6   | 1   | 16  | Pseudonocardia            | Pseudonocardiaceae                      | Actinobacteriota |
| OTU1430 | 16  | 15  | 8   | 7   | Rhodococcus               | Nocardiaceae                            | Actinobacteriota |
| OTU639  | 80  | 23  | 2   | 16  | Solirubrobacter           | Solirubrobacteraceae                    | Actinobacteriota |
| OTU158  | 616 | 48  | 282 | 6   | Streptomyces              | Streptomycetaceae                       | Actinobacteriota |
| OTU1390 | 27  | 110 | 285 | 26  | unclassified              | Frankiaceae                             | Actinobacteriota |
| OTU2420 | 101 | 41  | 552 | 2   | unclassified              | Kineosporiaceae                         | Actinobacteriota |
| OTU2061 | 56  | 580 | 337 | 98  | unclassified              | Streptomycetaceae                       | Actinobacteriota |
| OTU2994 | 1   | 2   | 1   | 3   | unclassified              | unclassified_o__Solirubrobac<br>terales | Actinobacteriota |
| OTU2627 | 12  | 128 | 259 | 5   | Bryobacter                | Bryobacteraceae                         | Acidobacteriota  |
| OTU2693 | 4   | 47  | 54  | 467 | Bryobacter                | Bryobacteraceae                         | Acidobacteriota  |
| OTU1554 | 3   | 54  | 12  | 1   | Candidatus_Solibact<br>er | Solibacteraceae                         | Acidobacteriota  |
| OTU1678 | 2   | 18  | 25  | 6   | Candidatus_Solibact<br>er | Solibacteraceae                         | Acidobacteriota  |
| OTU3117 | 8   | 15  | 16  | 125 | Candidatus_Solibact<br>er | Solibacteraceae                         | Acidobacteriota  |
| OTU1507 | 3   | 58  | 11  | 2   | norank                    | norank_o__Vicinamibacterial<br>es       | Acidobacteriota  |

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C: *Claopodium rugulosifolium*, O: *Orthotrichum courtoisii*, P: *Polytrichum formosum*, T: *Taxiphyllum giralddii*.

**Table S3.** Total number of core fungal sequences in four moss-dominated biocrusts.

| OTU ID  | Number of sequences |       |       |     | Taxonomy              |                                 |            |
|---------|---------------------|-------|-------|-----|-----------------------|---------------------------------|------------|
|         | C                   | O     | P     | T   | Genus                 | Family                          | Phylum     |
| OTU1059 | 258                 | 10    | 98    | 2   | Alternaria            | Pleosporaceae                   | Ascomycota |
| OTU193  | 438                 | 26    | 25    | 8   | Apiospora             | Apiosporaceae                   | Ascomycota |
| OTU787  | 1                   | 26    | 79    | 31  | Archaeorhizomyc<br>es | Archaeorhizomycetaceae          | Ascomycota |
| OTU1370 | 23                  | 4     | 9     | 8   | Aspergillus           | Aspergillaceae                  | Ascomycota |
| OTU1282 | 17                  | 2     | 1     | 1   | Chordomyces           | Plectosphaerellaceae            | Ascomycota |
| OTU674  | 2                   | 1180  | 2561  | 8   | Cladophialophora      | Herpotrichiellaceae             | Ascomycota |
| OTU680  | 47                  | 8486  | 17531 | 162 | Cladophialophora      | Herpotrichiellaceae             | Ascomycota |
| OTU1323 | 1828                | 187   | 1394  | 104 | Cladosporium          | Cladosporiaceae                 | Ascomycota |
| OTU115  | 384                 | 110   | 3     | 2   | Clonostachys          | Bionectriaceae                  | Ascomycota |
| OTU862  | 318                 | 3     | 163   | 2   | Curvularia            | Pleosporaceae                   | Ascomycota |
| OTU1380 | 12                  | 121   | 134   | 34  | Cyphellophora         | Cyphellophoraceae               | Ascomycota |
| OTU1477 | 1                   | 7     | 3     | 15  | Cyphellophora         | Cyphellophoraceae               | Ascomycota |
| OTU1503 | 9                   | 78    | 127   | 92  | Cyphellophora         | Cyphellophoraceae               | Ascomycota |
| OTU617  | 5                   | 7     | 2     | 6   | Cyphellophora         | Cyphellophoraceae               | Ascomycota |
| OTU631  | 100                 | 102   | 27    | 3   | Cyphellophora         | Cyphellophoraceae               | Ascomycota |
| OTU867  | 7                   | 154   | 13    | 2   | Cyphellophora         | Cyphellophoraceae               | Ascomycota |
| OTU1437 | 1                   | 24    | 28    | 47  | Devriesia             | Teratosphaeriaceae              | Ascomycota |
| OTU706  | 1                   | 62    | 1     | 7   | Devriesia             | Teratosphaeriaceae              | Ascomycota |
| OTU800  | 512                 | 17081 | 108   | 15  | Dokmaia               | Pleosporales_fam_Incertae_sedis | Ascomycota |
| OTU1024 | 3093                | 126   | 1220  | 6   | Epicoccum             | Didymellaceae                   | Ascomycota |
| OTU1456 | 3                   | 20    | 10    | 2   | Epicoccum             | Didymellaceae                   | Ascomycota |
| OTU1331 | 61                  | 204   | 191   | 1   | Fusarium              | Nectriaceae                     | Ascomycota |
| OTU649  | 35                  | 42    | 12    | 3   | Fusarium              | Nectriaceae                     | Ascomycota |
| OTU141  | 28                  | 252   | 2     | 2   | Fusidium              | Xylariales_fam_Incertae_sedis   | Ascomycota |
| OTU967  | 26                  | 2     | 15    | 1   | Gibellulopsis         | Plectosphaerellaceae            | Ascomycota |
| OTU1251 | 2                   | 3     | 6     | 1   | Letendraea            | Didymosphaeriaceae              | Ascomycota |
| OTU1230 | 8                   | 20    | 286   | 6   | Microsphaeropsis      | Pleosporales_fam_Incertae_sedis | Ascomycota |
| OTU697  | 246                 | 44    | 181   | 303 | Neopestalotiopsis     | Sporocadaceae                   | Ascomycota |
| OTU46   | 1963                | 578   | 95    | 44  | Nigrospora            | Trichosphaeriaceae              | Ascomycota |
| OTU824  | 75                  | 295   | 29    | 7   | Nigrospora            | Trichosphaeriaceae              | Ascomycota |
| OTU355  | 179                 | 5     | 602   | 2   | gOchroconis           | Sympoventuriaceae               | Ascomycota |
| OTU72   | 143                 | 275   | 3     | 4   | Paraconiothyrium      | Didymosphaeriaceae              | Ascomycota |
| OTU825  | 195                 | 41    | 24    | 5   | Paraconiothyrium      | Didymosphaeriaceae              | Ascomycota |
| OTU1219 | 27                  | 4     | 2264  | 9   | Paraphaeosphaeri<br>a | Didymosphaeriaceae              | Ascomycota |
| OTU288  | 106                 | 158   | 7     | 3   | Paraphaeosphaeri<br>a | Didymosphaeriaceae              | Ascomycota |
| OTU1212 | 284                 | 7     | 164   | 72  | Penicillium           | Aspergillaceae                  | Ascomycota |
| OTU1413 | 7                   | 3     | 3     | 34  | Penicillium           | Aspergillaceae                  | Ascomycota |

|         |      |       |      |      |                   |                                    |            |
|---------|------|-------|------|------|-------------------|------------------------------------|------------|
| OTU1472 | 365  | 3216  | 472  | 200  | Penicillium       | Aspergillaceae                     | Ascomycota |
| OTU1571 | 53   | 77    | 12   | 136  | Penicillium       | Aspergillaceae                     | Ascomycota |
| OTU763  | 12   | 3     | 1    | 13   | Penicillium       | Aspergillaceae                     | Ascomycota |
| OTU806  | 15   | 8     | 1    | 2    | Penicillium       | Aspergillaceae                     | Ascomycota |
| OTU837  | 28   | 11    | 34   | 2    | Penicillium       | Aspergillaceae                     | Ascomycota |
| OTU971  | 21   | 4     | 1825 | 94   | Penicillium       | Aspergillaceae                     | Ascomycota |
| OTU1308 | 3    | 1     | 615  | 1    | Periconia         | Periconiaceae                      | Ascomycota |
| OTU1319 | 54   | 74    | 105  | 5    | Periconia         | Periconiaceae                      | Ascomycota |
| OTU255  | 53   | 2     | 38   | 3    | Periconia         | Periconiaceae                      | Ascomycota |
| OTU378  | 13   | 13    | 5    | 1    | Periconia         | Periconiaceae                      | Ascomycota |
| OTU698  | 1    | 5     | 1    | 3    | Periconia         | Periconiaceae                      | Ascomycota |
| OTU929  | 54   | 62    | 686  | 10   | Periconia         | Periconiaceae                      | Ascomycota |
| OTU550  | 5888 | 15    | 153  | 37   | Pestalotiopsis    | Sporocadaceae                      | Ascomycota |
| OTU990  | 12   | 8     | 54   | 2    | Phaeosphaeriopsis | Phaeosphaeriaceae                  | Ascomycota |
| OTU670  | 16   | 240   | 20   | 1    | Plectosphaerella  | Plectosphaerellaceae               | Ascomycota |
| OTU1082 | 178  | 93    | 119  | 2    | Pseudopithomyces  | Didymosphaeriaceae                 | Ascomycota |
| OTU702  | 298  | 693   | 66   | 3    | Pseudopithomyces  | Didymosphaeriaceae                 | Ascomycota |
| OTU730  | 17   | 44    | 5    | 37   | Pyrenochaetopsis  | Cucurbitariaceae                   | Ascomycota |
| OTU836  | 158  | 9092  | 29   | 3    | Pyrenochaetopsis  | Cucurbitariaceae                   | Ascomycota |
| OTU527  | 15   | 13    | 4    | 9    | Roussoella        | Thyridariaceae                     | Ascomycota |
| OTU583  | 1    | 194   | 26   | 2    | Sarocladium       | Hypocreales_fam_Incertae_sedis     | Ascomycota |
| OTU1325 | 7    | 31    | 179  | 1    | Scolecobasidium   | Sympoventuriaceae                  | Ascomycota |
| OTU1179 | 32   | 73    | 333  | 83   | Setophoma         | Phaeosphaeriaceae                  | Ascomycota |
| OTU1348 | 29   | 5     | 16   | 19   | Strelitziana      | Chaetothyriales_fam_Incertae_sedis | Ascomycota |
| OTU468  | 5    | 4     | 43   | 16   | Strelitziana      | Chaetothyriales_fam_Incertae_sedis | Ascomycota |
| OTU1470 | 1097 | 293   | 171  | 3278 | Talaromyces       | Trichocomaceae                     | Ascomycota |
| OTU1593 | 429  | 4     | 76   | 27   | Talaromyces       | Trichocomaceae                     | Ascomycota |
| OTU243  | 10   | 2     | 2    | 1    | Talaromyces       | Trichocomaceae                     | Ascomycota |
| OTU771  | 97   | 686   | 17   | 762  | Talaromyces       | Trichocomaceae                     | Ascomycota |
| OTU345  | 59   | 1     | 16   | 5    | Trichaleurina     | Sarcosomataceae                    | Ascomycota |
| OTU789  | 436  | 2923  | 258  | 6    | Trichoderma       | Hypocreaceae                       | Ascomycota |
| OTU1090 | 8    | 2     | 13   | 8    | Trichomerium      | Trichomeriaceae                    | Ascomycota |
| OTU1518 | 4    | 1     | 3    | 4    | Trichomerium      | Trichomeriaceae                    | Ascomycota |
| OTU1271 | 1    | 2     | 7    | 1    | unclassified      | unclassified_c_Dothideomycetes     | Ascomycota |
| OTU1341 | 1    | 136   | 79   | 1    | unclassified      | unclassified_c_Eurotiomycetes      | Ascomycota |
| OTU1583 | 20   | 4     | 61   | 1    | unclassified      | unclassified_c_Eurotiomycetes      | Ascomycota |
| OTU1616 | 8    | 5     | 2    | 1824 | unclassified      | unclassified_c_Eurotiomycetes      | Ascomycota |
| OTU616  | 3    | 16901 | 22   | 135  | unclassified      | unclassified_c_Eurotiomycetes      | Ascomycota |

|         |     |      |      |     |                 |                                 |               |
|---------|-----|------|------|-----|-----------------|---------------------------------|---------------|
| OTU405  | 4   | 1    | 1    | 2   | unclassified    | unclassified_c__Sordariomycetes | Ascomycota    |
| OTU1167 | 1   | 1    | 1    | 1   | unclassified    | Botryosphaeriaceae              | Ascomycota    |
| OTU365  | 346 | 5    | 3    | 10  | unclassified    | Didymosphaeriaceae              | Ascomycota    |
| OTU87   | 494 | 37   | 16   | 7   | unclassified    | Montagnulaceae                  | Ascomycota    |
| OTU368  | 58  | 2    | 5    | 2   | unclassified    | Periconiaceae                   | Ascomycota    |
| OTU1143 | 153 | 6    | 2748 | 1   | unclassified    | Phaeosphaeriaceae               | Ascomycota    |
| OTU693  | 25  | 328  | 2    | 2   | unclassified    | Teichosporaceae                 | Ascomycota    |
| OTU1057 | 3   | 1    | 54   | 6   | unclassified    | Teratosphaeriaceae              | Ascomycota    |
| OTU1497 | 4   | 6    | 29   | 292 | unclassified    | Teratosphaeriaceae              | Ascomycota    |
| OTU1534 | 1   | 2    | 5    | 27  | unclassified    | Teratosphaeriaceae              | Ascomycota    |
| OTU1535 | 1   | 14   | 26   | 11  | unclassified    | Teratosphaeriaceae              | Ascomycota    |
| OTU1554 | 6   | 19   | 169  | 93  | unclassified    | Teratosphaeriaceae              | Ascomycota    |
| OTU625  | 2   | 1    | 1    | 1   | unclassified    | Teratosphaeriaceae              | Ascomycota    |
| OTU1102 | 10  | 1    | 12   | 1   | unclassified    | unclassified_o__Capnodiales     | Ascomycota    |
| OTU1350 | 1   | 6    | 10   | 2   | unclassified    | unclassified_o__Capnodiales     | Ascomycota    |
| OTU382  | 5   | 2    | 2    | 1   | unclassified    | unclassified_o__Capnodiales     | Ascomycota    |
| OTU1522 | 1   | 2    | 1    | 944 | unclassified    | unclassified_o__Chaetothyriales | Ascomycota    |
| OTU1376 | 22  | 5    | 9    | 15  | unclassified    | unclassified_o__Hypocreales     | Ascomycota    |
| OTU158  | 50  | 23   | 6    | 14  | unclassified    | unclassified_o__Pleosporales    | Ascomycota    |
| OTU341  | 12  | 5    | 3    | 2   | unclassified    | unclassified_o__Pleosporales    | Ascomycota    |
| OTU1152 | 2   | 96   | 98   | 9   | unclassified    | unclassified_o__Xylariales      | Ascomycota    |
| OTU1669 | 563 | 19   | 58   | 247 | unclassified    | unclassified_o__Xylariales      | Ascomycota    |
| OTU1674 | 4   | 3    | 5    | 156 | unclassified    | unclassified_o__Xylariales      | Ascomycota    |
| OTU575  | 7   | 110  | 3    | 140 | unclassified    | unclassified_p__Ascomycota      | Ascomycota    |
| OTU11   | 11  | 1    | 7    | 5   | Whalleya        | Xylariaceae                     | Ascomycota    |
| OTU1324 | 1   | 11   | 56   | 1   | Zymoseptoria    | Mycosphaerellaceae              | Ascomycota    |
| OTU553  | 862 | 2582 | 164  | 2   | Saitozyma       | Trimorphomycetaceae             | Basidiomycota |
| OTU393  | 446 | 15   | 853  | 222 | Hannaella       | Bulleribasidiaceae              | Basidiomycota |
| OTU1668 | 10  | 3    | 84   | 485 | Hannaella       | Bulleribasidiaceae              | Basidiomycota |
| OTU1147 | 65  | 5    | 413  | 23  | Hannaella       | Bulleribasidiaceae              | Basidiomycota |
| OTU1052 | 16  | 1    | 217  | 3   | Erythrobasidium | Erythrobasidiaceae              | Basidiomycota |
| OTU264  | 160 | 1    | 11   | 5   | Rhizopogon      | Rhizopogonaceae                 | Basidiomycota |
| OTU1663 | 29  | 4    | 44   | 38  | unclassified    | unclassified_o__Hymenochaetales | Basidiomycota |
| OTU991  | 2   | 10   | 68   | 29  | Peniophora      | Peniophoraceae                  | Basidiomycota |



|         |    |   |    |    |                 |                    |               |
|---------|----|---|----|----|-----------------|--------------------|---------------|
| OTU329  | 61 | 9 | 1  | 3  | Symmetrospora   | Symmetrosporaceae  | Basidiomycota |
| OTU581  | 31 | 1 | 20 | 13 | Ganoderma       | Ganodermataceae    | Basidiomycota |
| OTU1165 | 38 | 1 | 22 | 2  | Erythrobasidium | Erythrobasidiaceae | Basidiomycota |
| OTU1291 | 26 | 1 | 25 | 1  | Hannaella       | Bulleribasidiaceae | Basidiomycota |
| OTU1079 | 3  | 9 | 15 | 13 | Tinctoporellus  | Polyporaceae       | Basidiomycota |
| OTU889  | 1  | 1 | 34 | 2  | Schizophyllum   | Schizophyllaceae   | Basidiomycota |
| OTU1357 | 19 | 2 | 12 | 1  | Coprinellus     | Psathyrellaceae    | Basidiomycota |
| OTU907  | 4  | 2 | 21 | 3  | Psathyrella     | Psathyrellaceae    | Basidiomycota |
| OTU104  | 23 | 1 | 1  | 4  | Trechispora     | Hydnodontaceae     | Basidiomycota |
| OTU1137 | 6  | 3 | 15 | 5  | Loweporus       | Ganodermataceae    | Basidiomycota |
| OTU526  | 7  | 1 | 17 | 2  | Coprinellus     | Psathyrellaceae    | Basidiomycota |
| OTU1596 | 9  | 2 | 1  | 13 | unclassified    | Thelephoraceae     | Basidiomycota |
| OTU1576 | 2  | 1 | 7  | 7  | Microporus      | Polyporaceae       | Basidiomycota |
| OTU1183 | 1  | 3 | 7  | 5  | Nigroporus      | Steccherinaceae    | Basidiomycota |
| OTU293  | 7  | 1 | 4  | 4  | unclassified    | Thelephoraceae     | Basidiomycota |
| OTU348  | 7  | 1 | 7  | 1  | Gymnopilus      | Cortinariaceae     | Basidiomycota |
| OTU479  | 5  | 1 | 8  | 1  | Peniophora      | Peniophoraceae     | Basidiomycota |
| OTU1587 | 5  | 2 | 3  | 3  | Coprinopsis     | Psathyrellaceae    | Basidiomycota |
| OTU1603 | 3  | 1 | 4  | 3  | Hannaella       | Bulleribasidiaceae | Basidiomycota |
| OTU1689 | 3  | 3 | 3  | 2  | Phlebia         | Meruliaceae        | Basidiomycota |
| OTU1262 | 2  | 2 | 4  | 2  | Trechispora     | Hydnodontaceae     | Basidiomycota |

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|         |    |      |     |      |                |                 |                       |
|---------|----|------|-----|------|----------------|-----------------|-----------------------|
| OTU741  | 4  | 4    | 1   | 1    | Pseudomerulius | Tapinellaceae   | Basidiomycota         |
| OTU589  | 2  | 1    | 2   | 3    | Odontiopsis    | Schizoporaceae  | Basidiomycota         |
| OTU1105 | 1  | 1    | 3   | 1    | Ganoderma      | Ganodermataceae | Basidiomycota         |
| OTU1293 | 21 | 13   | 4   | 5    | Mortierella    | Mortierellaceae | Mortierellomycota     |
| OTU1654 | 7  | 5    | 3   | 4    | Mortierella    | Mortierellaceae | Mortierellomycota     |
| OTU235  | 14 | 6140 | 122 | 5992 | unclassified   | unclassified    | unclassified_k__Fungi |
| OTU1419 | 5  | 20   | 4   | 18   | unclassified   | unclassified    | unclassified_k__Fungi |
| OTU1639 | 2  | 2    | 4   | 5    | unclassified   | unclassified    | unclassified_k__Fungi |
| OTU98   | 1  | 1    | 4   | 4    | unclassified   | unclassified    | unclassified_k__Fungi |
| OTU817  | 1  | 2    | 3   | 3    | unclassified   | unclassified    | unclassified_k__Fungi |

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C: *Claopodium rugulosifolium*, O: *Orthotrichum courtoisii*, P: *Polytrichum formosum*, T: *Taxiphyllum giraldii*.